

L Number	Hits	Search Text	DB	Time stamp
1	25909	"in-situ" or "in situ"	USPAT; US-PGPUB	2002/09/29 13:15
2	6517	"b.sub.2h.sub.6" or diborane	USPAT; US-PGPUB	2002/09/29 13:16
3	7881	"ph.sub.3"	USPAT; US-PGPUB	2002/09/29 13:16
4	42982	"ccl.sub.4" or "carbon tetrachloride"	USPAT; US-PGPUB	2002/09/29 13:17
5	28149	"ph.sub.3" or phosphine	USPAT; US-PGPUB	2002/09/29 13:17
6	1304580	combination or combinations	USPAT; US-PGPUB	2002/09/29 13:17
7	1	("b.sub.2h.sub.6" or diborane) with ("ccl.sub.4" or "carbon tetrachloride") with (combination or combinations)	USPAT; US-PGPUB	2002/09/29 13:17
8	49161	"n-type"	USPAT; US-PGPUB	2002/09/29 13:18
9	49256	"p-type"	USPAT; US-PGPUB	2002/09/29 13:18
10	630	"n-type" with "p-type" with (combination or combinations)	USPAT; US-PGPUB	2002/09/29 13:18
11	70717	("b.sub.2h.sub.6" or diborane) or ("ccl.sub.4" or "carbon tetrachloride") or ("ph.sub.3" or phosphine)	USPAT; US-PGPUB	2002/09/29 13:18
12	64	("n-type" with "p-type" with (combination or combinations)) and (("b.sub.2h.sub.6" or diborane) or ("ccl.sub.4" or "carbon tetrachloride") or ("ph.sub.3" or phosphine))	USPAT; US-PGPUB	2002/09/29 13:18
13	74555	@ad>20010802 or @rlad>20010802	USPAT; US-PGPUB	2002/09/29 13:19
14	61	((("n-type" with "p-type" with (combination or combinations)) and (("b.sub.2h.sub.6" or diborane) or ("ccl.sub.4" or "carbon tetrachloride") or ("ph.sub.3" or phosphine))) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/29 13:19
15	44218	polysilicon	USPAT; US-PGPUB	2002/09/29 13:19
16	6	((("n-type" with "p-type" with (combination or combinations)) and (("b.sub.2h.sub.6" or diborane) or ("ccl.sub.4" or "carbon tetrachloride") or ("ph.sub.3" or phosphine))) not (@ad>20010802 or @rlad>20010802)) and polysilicon	USPAT; US-PGPUB	2002/09/29 13:19
-	46400	phosphorous	USPAT; US-PGPUB	2002/09/28 16:58
-	64876	implanted	USPAT; US-PGPUB	2002/09/28 16:58
-	299580	gate	USPAT; US-PGPUB	2002/09/28 16:59
-	74	phosphorous with implanted with "n-type" with gate	USPAT; US-PGPUB	2002/09/28 16:59
-	72	(phosphorous with implanted with "n-type" with gate) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/28 17:00
-	29	phosphorous with implanted with "p-type" with gate	USPAT; US-PGPUB	2002/09/28 17:00
-	29	(phosphorous with implanted with "p-type" with gate) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/28 17:09
-	118	"p-type" with "in-situ"	USPAT; US-PGPUB	2002/09/28 17:10

-	125	"p-type" with ("in-situ" or "in situ")	USPAT; US-PGPUB	2002/09/28 17:10
-	37	phosphorous and ("p-type" with ("in-situ" or "in situ"))	USPAT; US-PGPUB	2002/09/28 17:10
-	33	(phosphorous and ("p-type" with ("in-situ" or "in situ")) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/28 17:24
-	19	("in-situ" or "in situ") and "b.sub.2h.sub.6"	USPAT; US-PGPUB	2002/09/28 17:30
-	5825	"sicl.sub.4"	USPAT; US-PGPUB	2002/09/28 17:30
-	59	"b.sub.2h.sub.6" and "sicl.sub.4"	USPAT; US-PGPUB	2002/09/28 17:30
-	6354	diborane	USPAT; US-PGPUB	2002/09/28 17:31
-	292	"sicl.sub.4" and ("b.sub.2h.sub.6" or diborane)	USPAT; US-PGPUB	2002/09/28 17:32
-	146	"n-type" and ("sicl.sub.4" and ("b.sub.2h.sub.6" or diborane))	USPAT; US-PGPUB	2002/09/28 17:32
-	129	("n-type" and ("sicl.sub.4" and ("b.sub.2h.sub.6" or diborane))) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/28 17:44
-	44218	polysilicon	USPAT; US-PGPUB	2002/09/28 17:44
-	29	((("n-type" and ("sicl.sub.4" and ("b.sub.2h.sub.6" or diborane))) not (@ad>20010802 or @rlad>20010802)) and polysilicon	USPAT; US-PGPUB	2002/09/28 17:50
-	53197	cmos	USPAT; US-PGPUB	2002/09/28 17:51
-	1172	("in-situ" or "in situ") and cmos	USPAT; US-PGPUB	2002/09/28 17:51
-	315747	compensate or compensates or compensated or compensating	USPAT; US-PGPUB	2002/09/28 17:51
-	165	((("in-situ" or "in situ") and cmos) and (compensate or compensates or compensated or compensating)	USPAT; US-PGPUB	2002/09/28 18:09
-	1	("4990974").PN.	USPAT; US-PGPUB	2002/09/28 18:14
-	7881	"ph.sub.3"	USPAT; US-PGPUB	2002/09/28 18:17
-	111	"b.sub.2h.sub.6" with "ph.sub.3"	USPAT; US-PGPUB	2002/09/28 18:18
-	17	"sicl.sub.4" and ("b.sub.2h.sub.6" with "ph.sub.3")	USPAT; US-PGPUB	2002/09/28 18:18
-	12	("sicl.sub.4" and ("b.sub.2h.sub.6" with "ph.sub.3")) not (@ad>20010802 or @rlad>20010802)	USPAT; US-PGPUB	2002/09/28 18:18

is made up of an n-type polycrystalline silicon film in which n-type impurities (for example, phosphorous) have been implanted;

(54) case 2, a p.sup.+ -gate p-channel MISFET, the gate electrode of which is made up of a p-type polycrystalline silicon film in which p-type impurities (for example, boron) have been implanted, and

(55) case 3, a p.sup.+ -gate p-channel MISFET, the gate electrode of which is made up of a p-type polycrystalline silicon film in which n-type impurities (for example, phosphorous) and p-type impurities (for example, boron) have been implanted .

(56) FIG. 23 shows one example of the gate voltage-drain current characteristics of n'-gate p-channel MISFETs (case 1) and n.sup.+ -gate p-channel MISFETs (case 2). The difference between the threshold voltages of the n.sup.+ -gate p-channel MISFETs and the p.sup.+ -gate p-channel MISFETs should be 1.1 V, as this corresponds to the band-gap width of silicon (Si). However, the threshold voltages of the p.sup.+ -gate p-channel MISFETs are lowered in this case because of leakage of boron, and the difference thus becomes approximately 1.3 V, and the dispersion of the threshold voltages is thus increased.

(57) FIG. 24 shows the relation of the differences between the threshold voltages of n.sup.+ -gate p-channel MISFETs (case 1) and p.sup.+ -gate p-channel MISFETs (case 2) and the dosages of boron ions (accelerated energy 5



US-PAT-NO: 6261887

DOCUMENT-IDENTIFIER: US 6261887 B1

TITLE: Transistors with independently formed gate structures and method

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In one embodiment, the readily etchable segment 32 may comprise the gate body of one of the transistors. In this embodiment, the readily etchable segment 32 may comprise non-crystalline silicon or silicon-germanium in-situ or implant doped with p-type dopants such as boron where the readily etchable segment 32 will form the gate body of a p-type transistor or semiconductor material in-situ or implant doped n-type dopants such as arsenic or phosphorus where the readily etchable segment 32 will form the gate body of an n-type transistor. In another embodiment, the readily etchable segments 32 may be removed and replaced with a gate body of the transistor. In this embodiment, the readily etchable segment 32 may comprise a non-nitride material such as silicon, silicon-germanium and the like. The materials of the buffer segment 30 and readily etchable segment 32 should be relatively etchable with respect to each other to allow the buffer segment 30 to act as an etch stop to etching of the

US-PAT-NO: 6333249

DOCUMENT-IDENTIFIER: US 6333249 B1

TITLE: Method for fabricating a semiconductor device

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In a prior art method for fabricating a dual gate electrode device, a n.sup.+ gate and a p.sup.+ gate are respectively deposited and patterned on an upper portion of an undoped polysilicon layer using a mask and dual implantation method (n.sup.+ :As.P, p.sup.+ :B.BF.sub.2), or an in-situ doping method.

In the in-situ doping method it is necessary to set up respective process steps, because the gate electrodes for the n.sup.+ and p.sup.+ polysilicon layers should be formed separately.

Then, an oxide film 105a having a predetermined thickness is formed on the upper portion of the entire surface by a thermal oxidation process both to compensate for the semiconductor substrate 100 damaged during the etching process and to prevent the semiconductor substrate 100 and the undoped